

## DESCRIPTION

### LIQUID CONTAINER

#### RELATED APPLICATIONS

The present application is based on, and claims priority from, International Application No. PCT/JP2005/018335 filed October 4, 2005 and Japanese Application No. 2005-154066 filed May 26, 2005, the disclosures of which are hereby incorporated by reference herein in their entirety.

#### TECHNICAL FIELDFIELD OF THE INVENTION

The present invention relates to a liquid container for containing various liquids including beverages, such as a PET bottle.

#### BACKGROUND ARTOF THE INVENTION

Usually, beverages including refreshing drinks, carbonated drinks, teas and alcoholic drinks are contained in plastic liquid containers, such as PET bottles, when they are offered for sale. Such a liquid container is provided with a hollow container body capable of accommodating a drink and a neck extending from the top end of the container body, and a mouth is disposed at the top end of the neck.

When the drink is to be poured from this liquid container into a cup or a glass, the container body is held and inclined while the drink is being poured so that the mouth is positioned over the cup or the glass, but when the quantity of drink in the liquid container is large, the drink may splash out when the container body is inclined, resulting in a problem that the drink may be spilled out of the cup or the glass or be scattered around.

In this connection, there is a known what has drink container having a neck extending obliquely upward at the top of the container body and ~~is inclined in the~~ an inclining

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direction of the neck when pouring the drink is poured, to facilitate pouring of the drink into the cup or the glass (see, for instance, Patent Document 1).

However, since ~~what~~ such a drink container has a neck whose shape is inclined in advance as described ~~above~~ above, the drink container cannot be held with the mouth of the neck oriented straight upward when the drink is not to be poured, inconvenience often occurs with the neck kept inclined. For instance, in a drink manufacturing plant, the drink cannot be poured into the container from ~~right above it~~, and ~~accordingly a position immediately above the container~~. Accordingly there is the trouble of impossibility to use the are substantial problems in filling such containers in existing plant facilities. Also, when such containers are ~~to be displayed as merchandise in sales-retail stores~~, unless their inclined ~~neck-necks~~ are aligned with one another, the displayed state ~~will look-looks~~ disorderly and ~~deteriorate-deteriorates~~ the looks of the store display.

Patent Document 1: Japanese Utility Model Registration No. 3107288

DISCLOSURE SUMMARY OF THE INVENTION

~~An~~ In view of the problems noted above, an object of the present invention, attempted ~~in view of the problems noted above~~, is to provide a new and improved liquid container for permitting pouring of liquid with its mouth directed obliquely and also upright orientation of the mouth.

~~In order to achieve the object stated above~~, An aspect of the invention relates to a liquid container ~~is provided with a hollow container body capable of accommodating any desired drink-liquid~~ and a neck extending from the top end of the container body, with a mouth for pouring liquid disposed at the top end of the neck, wherein the liquid container being characterized being provided with includes a movable-movable, i.e., flexible, part which can incline sideways-be inclined sideways, with the neck positioned above it-the flexible part in a prescribed position in the vertical position of the neck.

~~This enables, when~~ When liquid is ~~to be poured into an external container~~, the structure enables the pouring can-to be done with the mouth of the liquid holding container

directed toward the external container by inclining the neck in the upper part of the movable part sideways, and accordingly sideways. Accordingly it is made possible to reduce the trouble of letting problem of the liquid spill-spilling out of the external container or scatter scattering around it. Also, except when pouring liquid, the mouth of the liquid holding container can be kept right upward without inclining the neck.

A Because the liquid container according to the invention, since it allows pouring of liquid with its the mouth of the liquid container directed obliquely, pouring of the liquid into an external container is facilitated and the pouring of the liquid is enabled to can be done smoothly. Also, as it is also permissible possible to direct the mouth right directly upward, it is possible, in a liquid manufacturing plant-dispensing plant, for instance, to pour the drink into the container from right immediately above it the container as is the case with ordinary liquid containers and accordingly there is the advantage of possibility to use the containers, thereby enabling the container to be used in existing plant facilities. In addition, when such containers are to be displayed as merchandise in sales-retail stores, they the container can be displayed in an orderly way way, in the same way as ordinary liquid containers are containers, by directing their neck right directly upward, resulting in the advantage that the looks appearance of the store display are is not deteriorated.

#### BRIEFLY DESCRIBE OF THE DRAWINGSBRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is an overall perspective view showing of a liquid container of an embodiment according to the present invention;

Figures 2(a) to 2(c) are front views of the liquid container of Fig. 1 under different circumstances;

Figure 3 is a front section of the essential part showing a state in which sectional view of the neck of the liquid container of Fig. 1, wherein the neck is pulled upward as in Fig. 2(a);

Figure 4 is a front section of the essential part showing a state in which sectional view of the neck of the liquid container of Fig. 1, wherein the neck is pressed downward as in Fig. 2(b);

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Figure 5 is a front section of the essential part showing a state in which sectional view of the neck of the liquid container of Fig. 1, wherein the neck is inclined as in Fig. 2(c);

Figure 6 is a side view showing a state of pouring drink out of the container of Fig. 1, as in Figs. 2(c) and 5, wherein liquid is being poured downwardly from the container into a glass;

Figure 7 is a side view of the container of Fig. 1, as in Figs. 2(c) and 5, wherein liquid is being poured from an upwardly inclined neck, thence downwardly into a container, showing another state of pouring drink out;

Figure 8 is a plan top view of another embodiment of a liquid container representing another embodiment according to the invention;

Figure 9 is a front view of the essential part neck and top of the liquid container of Fig. 8; and

Figure 10 is a front section sectional view of the essential part neck and top of the liquid container of Figs. 8 and 9.

#### DESCRIPTION OF SYMBOLS

1 ... container body; 2 ... neck; 2a ... first lower neck portion; 2b ... second upper neck portion; 3 ... movable part, flexible neck portion between neck portions 2a and 2b; 3a ... concave dimples between portions 2d and 3; 4 ... cap; 6 ... drink, 8 ... liquid.

#### BEST MODE FOR CARRYING OUT THE INVENTION DETAILED DESCRIPTION OF THE DRAWINGS

Figure 1 through Figure 6 show an embodiment of the present invention, wherein Figure 1 is an overall perspective view of a liquid container; Figures 2(a) to 2(c), its front views; Figure 3, a front section of the essential part showing a state in which the neck is pulled upward; Figure 4, a front section of the essential part showing a state in which the neck is pressed downward; Figure 5, a front section of the essential part showing a state in which the neck is inclined; and Figure 6, a side view showing a state of pouring drink out.

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This liquid container is provided with a of Figs. 1-7 includes a liquid container body 1 capable of containing a drink, liquid, such as a beverage, a neck 2 extending upward from the upper end side of the container body 1, a movable ~~movable~~, i.e., flexible, part 3 disposed in a prescribed position in the vertical direction of the neck 2, and the container 2. Container body 1, the neck 2 and the movable ~~flexible~~ part 3 are formed integrally by known blow molding techniques.

The container body 1 has a vertically long hollow shape whose ~~having a longitudinal axis and a transverse section constitutes with a substantially rectangular shape, and is formed in a shape.~~ The size matching of body 1 matches a prescribed capacity (e.g. 1 liter, 1.5 liters, 2 liters and so forth).

The neck 2 comprises a first ~~lower neck portion 2a~~ formed underneath the movable flexible part 3 and a ~~second an upper neck portion 2b~~ formed ~~ever above~~ the movable flexible part 3, and a mouth 2c is disposed at the upper end of the ~~second upper neck portion 2b~~. The ~~first lower neck portion 2a~~ is so formed that its transverse section constitutes a substantially rectangular shape, and its side faces so extend obliquely upward as to approach one another from the upper end side of the container body 1. The upper end part 2d (Fig. 3) of the ~~first lower neck portion 2a~~ is so formed that its transverse section ~~constitutes has~~ a round shape and that its diameter increases obliquely upward to form a structure similar to a fold of a bellows. The ~~second upper neck portion 2b~~ is formed so formed that its transverse section ~~constitutes has~~ a round shape, and its circumferential shape is formed so formed that the diameter is greater in the substantially central part in the vertical direction and is smaller toward the upper end and the lower end so as to form a structure similar to a bulb. A cap-shaped lid 4 is screwed onto threads of the upper end of the ~~second upper neck portion 2b~~, and the mouth 2c is opened and closed by the lid 4.

The movable ~~flexible~~ part 3 is arranged between the ~~first lower neck portion 2a~~ and the ~~second upper neck portion 2b~~, and the ~~second upper neck portion 2b~~ is so deformable so as to be capable of being inclined in the transverse direction. The movable ~~flexible~~ part 3 is formed in ~~has~~ a flange shape extending in the radial direction of the neck 2, and the

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second-upper neck portion 2b is arranged inwardly in ~~that~~ the radial direction. Thus, the movable-flexible part 3 extends outward in the radial direction from the lower end side of the second-upper neck portion 2b to the upper end-part 2d of the first-lower neck 2a, and its portion 2a. The flange part ~~is to be of~~ flexible part 3 can also be deformed in the vertical direction. In this case, the movable-flexible part 3 is so-formed as ~~to be capable of being held so it can be deformed by being pulled upwardly~~ upward as shown in Figure 2(a) and in a state in which its flange part is deformed ~~downward~~ downwardly as shown in Figure 2(b).

Thus, as shown in Figure 2(a) and Figure 3, when the second-upper neck portion 2b is pulled ~~upward, upwardly,~~ the movable-flexible part 3 is so deformed as to have an upward convex shape, and the neck 2 is ~~held in a state of being stretched upwardly~~ in the vertical direction. Also, as shown in Figure 2(b) and Figure 4, when the second-upper neck portion 2b is pressed ~~downward, downwardly,~~ the movable-flexible part 3 is so-deformed as to have a downward convex shape, and the neck 2 is ~~held in a state of being contracted~~ contracted, i.e., compressed, in the vertical direction. Further, as shown in Figure 2(c) and Figure 5, when the second-upper neck portion 2b is inclined sideways, the movable-flexible part 3 is so-deformed as to have a downward convex shape on one end side in the widthwise direction (the inclining direction of the second-upper neck portion 2b) and the movable-flexible part 3 is so deformed as to have an upward convex shape on the other end-side in the widthwise direction (the opposite side in the inclining direction of the second-upper neck portion 2b) to hold the second-upper neck portion 2b in the inclined state. In this case, the second-upper neck portion 2b can be inclined toward any side in the radial direction of the movable-flexible part 3.

The liquid container configured as described above is to contain a drinkbeverage, such as tea, juice, alcoholic drink or the like ~~and, when like.~~ When a drink-beverage 6 is poured from the container body into a glass 5 as shown in Figure 6, pouring of the drink beverage 6 into the glass 5 is facilitated by inclining the container body 1 ~~in a state in which~~ so the second-upper neck portion 2b is slanted-slanted, i.e., tilted relative to the longitudinal

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axis of body 1, toward the glass 5, resulting in a reduced risk of spilling the drink beverage 6 out of the glass 5 or letting having it scatter around the glass 5.

In this way, because the liquid container in this embodiment, as it of Figs. 1-6 is provided with the movable flexible, deformable part 3 so deformable as to incline the second that enables upper neck portion 2b to be inclined sideways, facilitates pouring of the drink beverage 6 into the glass 5 is facilitated by having the drink beverage 6 poured in a state in which wherein the second upper neck portion 2b is slanted toward the glass 5, and the pouring of the liquid is enabled to be done smoothly. Also, as the second upper neck portion 2b can be slanted as required, it is permissible possible to keep the mouth 2c right upward straight upward without inclining the second upper neck portion 2b except when the drink beverage is to be poured. This makes it possible, in a liquid manufacturing plant for instance, to pour the drink beverage into the container from right above it the container as is the case with ordinary liquid containers and accordingly there is the advantage of possibility to use the using existing plant facilities. Also, when such containers are to be displayed as merchandise in sales retail stores, they the containers can be displayed in an orderly way as ordinary liquid containers are by upwardly directing their second upper neck portion 2b right upward, resulting in the further advantage that the looks appearance of the store display are is not deteriorated.

Moreover, as the movable flexible part 3 is formed in as a flange shape extending in the radial direction from the lower end side of the second upper neck portion 2b positioned above it and the flange-shaped part is deformable in the vertical direction, the second upper neck portion 2b can be inclined toward any side in the radial direction of the movable flexible part 3. This enables the pouring of the drink beverage to be done easily without having to hold the container body 1 in a different way depending on the inclining inclination direction of the second upper neck portion 2b. In this case, since the movable flexible part 3 expands in a flange shape toward underneath the mouth 2c, there is another advantage that drops of the drink beverage falling from the mouth 2c can be received by the movable flow into

flexible part 3 and the drops of the drink beverage can be prevented from flowing down to the container body 1.

Furthermore, when the second upper neck portion 2b is inclined sideways in the state of being pressed downward, as a portion (on the opposite side in the inclining direction) of the flange-shaped part of the movable flexible part 3 is deformed upward and the position of the liquid face upper surface 6a (Fig. 4) of the drink beverage 6 within relative to the mouth 2c is correspondingly lowered, even the quantity of the drink beverage 6 within container body 1 is large, the drink beverage 6 will does not vigorously splash out when the container body 1 is inclined, and it is thereby made easier to pour the drink beverage 6.

Also, as the flange-shaped part of the movable flexible part 3 is formed to be held bent in an upward deformed state and a downward deformed state, the inclined state of the second upper neck portion 2b can be securely held.

Further, as the container body 1, the neck 2 and the movable flexible part 3 are integrally formed, they can be fabricated in a similar fabricating method to ordinary containers, for instance by blow molding, and accordingly a significant advantage in practical application can be achieved.

Incidentally, though the movable flexible part 3 is formed in to have a flange shape is as shown with respect to the embodiment described above, a movable part in the flexible part 3 can have some other shape may as well be disposed appropriate, such as forming part of the neck 2 in a bellows shape. Also, though the transverse section of the container body 1 has a substantially rectangular shape in the embodiment described above, its transverse section may as well can also be in a round shape. Further, the present invention containers can be applied not only to containers used for selling purposes other than holding drinks, such as PET bottles, but also to bottles; for example, the containers can be used for other purposes including, for instance, drink beverage containers for household use and canteens. The invention containers can also be applied to what is intended for containing various non-drink beverage liquids, such as seasonings, oils, detergents and liquids for industrial use. In this case, when it is desired to pour the liquid little by little as in



the case of a seasoning or the like, when a liquid 8 is to be poured into a container 7 as shown in Figure 7, if the ~~second upper neck portion~~ 2b is slanted toward the direction opposite to the container 7 and the liquid 8 is discharged, the liquid ~~6-8 will is~~ not be discharged in a large quantity at a time even if the container body 1 is slanted, but the liquid 8 can be poured securely little by little.

~~Figure~~ Figures 8 through Figure 10 ~~show are illustrations of~~ another embodiment of the invention, ~~container~~, wherein Figure 8 is a plan new of a liquid container; Figure 9, 9 is a front view of the ~~essential part neck and upper part thereof~~; and Figure 10, 10 is a front ~~section sectional view of the essential part neck and upper part thereof~~. Incidentally, ~~the~~ The similar constituent parts as in the foregoing embodiment are designated by respectively the same symbols.

In ~~this the~~ the embodiment of Figs. 8-10, the ~~movable flexible~~ part 3 is provided with a plurality of ~~concaves concave dimples 3a, and each 3a~~. Each of the concaves concave dimples 3a is so arranged at intervals in around the circumferential direction of the movable flexible part 3 as to be positioned on the periphery of the flange-shaped part. In this case, each of the concaves concave dimples 3a is so-formed in the movable flexible part 3 so as to extend from the upper face of the flange-shaped part to the upper end part 2d of the first lower neck portion 2a.

This causes, when the flange-shaped part of the ~~movable flexible~~ part 3 is deformed in the vertical direction, stresses in the circumferential ~~direction arising direction~~. The stresses on the periphery of the flange-shaped part to be are absorbed by the deformation of each of the ~~concaves concave dimples 3a~~ in the circumferential direction, so that, even if the ~~movable flexible~~ part 3 is deformed repeatedly, no crack occurs in the periphery of the flange-shaped part, resulting in improvement in durability.